



# Model Curriculum

**QP Name: Telecom Technician - IOT Device/Systems**

**QP Code: TEL/Q6210**

**QP Version: 4.0**

**NSQF Level: 4**

**Model Curriculum Version: 1.0**

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# Training Parameters

Sector	Telecom
Sub-Sector	Network Managed Services
Occupation	Operation and Maintenance
Country	India
NSQF Level	4
Aligned to NCO/ISCO/ISIC Code	NCO-2015/3114.0803
Minimum Educational Qualification & Experience	11th grade pass <b>OR</b> Completed 1st year of 3- year diploma (after 10th) and pursuing regular diploma <b>OR</b> 10th grade pass and pursuing continuous schooling <b>OR</b> 10th Grade Pass with 2-year relevant experience <b>OR</b> Previous relevant Qualification of NSQF Level 3.0 with minimum education as 5th Grade pass with 2-year relevant experience
Pre-Requisite License or Training	NA
Minimum Job Entry Age	17 Years
Last Reviewed On	27/01/2022
Next Review Date	27/01/2025
NSQC Approval Date	27/01/2022
QP Version	4.0
Model Curriculum Creation Date	27/01/2022
Model Curriculum Valid Up to Date	27/01/2025
Model Curriculum Version	1.0
Minimum Duration of the Course	540 Hours, 0 Minutes
Maximum Duration of the Course	540 Hours, 0 Minutes

# Program Overview

This section summarizes the end objectives of the program along with its duration.

## Training Outcomes

At the end of the program, the learner should have acquired the listed knowledge and skills.

- Install and configure IOT devices at customer premises.
- Perform level 1 troubleshooting of IOT devices.
- Organize work and resources as per health and safety standards.
- Inclusive communication, interpersonal skills, and sensitization towards gender and persons with disability (PwD).

## Compulsory Modules

The table lists the modules and their duration corresponding to the Compulsory NOS of the QP.

NOS and Module Details	Theory Duration	Practical Duration	On-the-Job Training Duration (Mandatory)	On-the-Job Training Duration (Recommended)	Total Duration
<b>Bridge Module</b>	<b>20:00</b>	<b>10:00</b>	<b>00:00</b>	<b>00:00</b>	<b>30:00</b>
Module 1: Role and responsibilities of Telecom Technician – IOT Device/System	20:00	10:00	00:00	00:00	30:00
<b>TEL/N6234 – Install and configure IOT devices at customer premises NOS Version No. 1.0 NSQF Level 4</b>	<b>60:00</b>	<b>80:00</b>	<b>40:00</b>	<b>00:00</b>	<b>180:00</b>
Module 2: Install and Configure IOT devices	60:00	80:00	40:00	00:00	180:00
<b>TEL/N6236 – Perform level 1 troubleshooting of IOT devices NOS Version No. 1.0 NSQF Level 4</b>	<b>50:00</b>	<b>80:00</b>	<b>80:00</b>	<b>00:00</b>	<b>210:00</b>
Module 3: Level 1 Troubleshooting of IOT devices	50:00	80:00	80:00	00:00	210:00
<b>TEL/N9101 – Organise work and resources as per health and safety standards NOS Version No. 1.0 NSQF Level 4</b>	<b>10:00</b>	<b>20:00</b>	<b>00:00</b>	<b>00:00</b>	<b>30:00</b>
Module 4: Plan Work Effectively, Optimise Resources and Implement Safety Practices	10:00	20:00	00:00	00:00	30:00

<b>TEL/N9102 – Interact Effectively with Team Members and Customers NOS Version No. 1.0 NSQF Level 4</b>	<b>10:00</b>	<b>20:00</b>	<b>00:00</b>	<b>00:00</b>	<b>30:00</b>
Module 5: Communication and interpersonal skills	10:00	20:00	00:00	00:00	30:00
DGT/VSQ/N0102 Employability Skills (60 Hours)	60:00	00:00	00:00	00:00	60:00
<b>Total Duration</b>	<b>210:00</b>	<b>210:00</b>	<b>120:00</b>	<b>00:00</b>	<b>540:00</b>

# Module Details

## Module 1: Role and responsibilities of Telecom Technician - IOT Device/System Bridge Module

### Terminal Outcomes:

- Install and configure IOT devices.
- Perform level 1 troubleshooting of IOT devices.

<b>Duration:</b> 20:00	<b>Duration:</b> 10:00
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• Explain the role and responsibilities of Telecom Technician - IOT Device/System.</li> <li>• Identify the various electrical and electronic components and their specifications.</li> <li>• Identify the scope/future and industry of the IOT device/system.</li> <li>• Identify the processes and technologies used in installation of IOT device/system.</li> <li>• Identify the safety, health and environmental policies and regulations for the workplace as well as for telecom sites in general.</li> </ul>	<ul style="list-style-type: none"> <li>• Perform installation and configuration of IoT devices (nodes).</li> <li>• Perform communication links between nodes and controller (gateway) and further to central servers or devices through external communication links on Wi-Fi, 3G/4G networks on GSM/CDMA.</li> <li>• Demonstrate how to Improve and upsell our sales at the point of installation.</li> <li>• Ensure all equipment are fully functional when on-site, if not then follow-up action should be implemented.</li> </ul>
<b>Classroom Aids:</b>	
Laptop, white board, marker, projector	
<b>Tools, Equipment and Other Requirements</b>	
Documents of standard operating procedures, code of conduct, checklists, schedules tools and equipment, status report	

## Module 2: Install and Configure IOT devices

### Mapped to TEL/N6234 v2.0

#### Terminal Outcomes:

- Perform preventive maintenance
- Perform corrective maintenance
- Arrange tools and spares
- Record and document maintenance status

Duration: 60:00	Duration: 80:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> <li>• Identify various type of micro-processor boards (Arduino, Raspberry-pi, other customized platforms) and microcontrollers.</li> <li>• Discuss technical writing (flow, process step etc.) and process document for various software and hardware.</li> <li>• Explain the functionality of micro-processors boards, configurations, on-board devices and functionality.</li> <li>• State types of sensors and their operations, characteristics, limitations, grades sensors and their reliability.</li> <li>• Identify short range communication protocols (blue tooth, Zigbee, Wi-fi, etc) and long-range protocols including 3G/4G, 6 lowpan, lora etc and their applicability in IoT.</li> <li>• State IoT basics, micro-processor and micro-controllers, configuration of eSIMs.</li> <li>• State the risk and impact of not following the defined procedures/work instructions.</li> <li>• Explain the concept of node, gateway, communication protocols.</li> <li>• State various components and pin configurations of micro-controller boards and interconnectivity provisions for input/output power supply etc.</li> <li>• Discuss latest articles and trending technologies.</li> <li>• Identify the key differences between node and a gateway and their respective applications.</li> <li>• Identify frameworks and connectivity requirements for specific network devices.</li> <li>• List tools, connectors and cables as per the device configuration.</li> </ul>	<ul style="list-style-type: none"> <li>• Demonstrate how to generate installation points for capturing desired input parameters and gateway accounting to meet with power supply requirements.</li> <li>• Illustrate communication line connectivity using appropriate nodes, gateway, ethernet and 3G/4G/Wi-fi networks and check functioning of the protocols.</li> <li>• Demonstrate how to write and record appropriate technical forms, activity logs.</li> <li>• Demonstrate how to locate points on surface and mount IoT devices at identified points/location.</li> <li>• Perform steps to manage necessary connections for power supply and earthing by ensuring proper grounding, no floating earth situation and understanding of SNR in case of wiring.</li> <li>• Employ appropriate cable connectors and micro controller for connection to data transfer device (desktop/laptop).</li> <li>• Perform steps to install suitable framework on desktop/laptop which is compatible with the micro-controller board.</li> <li>• Apply compilation of on-board microprocessor code using appropriate framework on desktop/laptop.</li> <li>• Employ proper method/technique to ensure proper functioning of micro-controller and related devices using appropriate emulators/framework features.</li> <li>• Demonstrate how to set up nodes and</li> </ul>

<ul style="list-style-type: none"> <li>• Explain the safe handling procedure for IoT and electronic devices (micro controller boards, ICs).</li> <li>• State various short range communication protocols for effective communication.</li> <li>• Explain connectivity options available on micro controller boards for data transfer.</li> <li>• State the process of transferring software code to on-board micro-processor through nodes and gateways.</li> <li>• Identify faults/errors in codes and debug software.</li> <li>• Explain escalation matrix for reporting identified incidents, trouble sand/emergencies, e.g., system failures, fire and power failures.</li> <li>• State the process for communication/data transfer using on-screen i/o streams or appropriate led indications (as per the system test manual).</li> <li>• Explain transmission control protocol (TCP)/user datagram protocol (UDP).</li> <li>• List Wi-fi, short range, 3G and 4G communication protocols.</li> <li>• Discuss the best practices for network and communication security.</li> <li>• Explain interconnectivity diagram (electronic components, micro/breadboards).</li> </ul>	<p>gateways appropriately for execution of the uploaded software.</p> <ul style="list-style-type: none"> <li>• Demonstrate how to establish effective connectivity between gateway and local Wi-fi router or 3G/4G connectivity options (pre-configured in the uploaded software on gateway micro-controller), including configuration.</li> <li>• Illustrate how to check data transfer and confirm the same from the server end.</li> <li>• Perform step for device connections, cables, connectors, proper grounding, frameworks and error reading &amp; troubleshooting.</li> </ul>
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**Classroom Aids:**

Whiteboard and Markers  
 Chart paper and sketch pens  
 LCD Projector and Laptop for presentations

**Tools, Equipment and Other Requirements**

Raspbian, RasW, SODAQ, Tessel, Pinoccio, OpenPicus, Microduino, LightBlue Bean Punch Through, Flutter, Beagle Board, Arduino Yún, Node-RED, M2MLabs Mainspring, Kinoma, Arduino, Eclipse, IoT Project, Freeboard, Spark, Service Manual/ User Manuals, Program Authentication Form, Customer Feedback form



## Module 3: Level 1 troubleshooting of IOT devices

### Mapped to TEL/N6236 v2.0

#### Terminal Outcomes:

- Perform level 1 troubleshooting of IOT devices.

Duration: 50:00	Duration: 80:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> <li>• List organizational processes and SPOCs relevant to work.</li> <li>• Explain escalation matrix for de-bugging unresolved issues/incidences.</li> <li>• State the method/process to record performance/test results.</li> <li>• Explain the processes involved in checking the working of various connection/communication modules such as Wi-fi, 3G and 4G whichever is applicable at nodes.</li> <li>• List SHE and OHS guidelines and regulations as per company's norms.</li> <li>• Discuss micro-controller boards, types and configurations.</li> <li>• State communication protocols.</li> <li>• Explain the process of re-loading the nodes and gateway software.</li> <li>• Identify board specific software frameworks and their operations.</li> <li>• Discuss types of sensors and output types (digital/analog).</li> <li>• State different test code output and their meaning.</li> </ul>	<ul style="list-style-type: none"> <li>• Demonstrate how to setup test environment and formulate test strategy/test cases.</li> <li>• Employ test connectivity between various devices/components such as between sensors and micro-controller and nodes and gateway using appropriate software tools/framework.</li> <li>• Perform steps to check all connections and pin/jumper settings to ensure uninterrupted on-board power supply.</li> <li>• Demonstrate the re-loading of node software.</li> <li>• Perform steps to check on-board memory storage card for storing node data by using appropriate micro-controller board and software/framework.</li> <li>• Illustrate how to create appropriate connectivity IDs/password in the software code.</li> <li>• Demonstrate how to check communication link performance matrix between node and gateway by using appropriate software tools/framework.</li> <li>• Demonstrate how to check data transfer from gateway to server.</li> <li>• Demonstrate how to escalate the issues/concern to the central/main tech team.</li> </ul>
Classroom Aids:	
Laptop, white board, marker, projector	
Tools, Equipment and Other Requirements	
Raspbian, RasW, SODAQ, Tessel, Pinoccio, OpenPicus, Microduino, LightBlue Bean Punch Through, Flutter, Beagle Board, Arduino Yún, Node-RED, M2MLabs Mainspring, Kinoma, Arduino, Eclipse, IoT Project, Freeboard, Spark, troubleshooting device/systems	

## Module 4: Organize Work and Resources as per Health and Safety Standards Mapped to TEL/N9101 v1.0

### Terminal Outcomes:

- Explain how to plan work effectively, implement safety practices and optimise use of resources.

<b>Duration: 10:00</b>	<b>Duration: 20:00</b>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• List the recent skills and technologies prevalent in the telecom industry.</li> <li>• Discuss the commonly occurring problems with their causes and solutions.</li> <li>• State the importance of keeping the workplace clean, safe and tidy.</li> <li>• List different types of hazards and the procedure to report it to the supervisor.</li> <li>• List the precautionary steps one needs to follow while handling hazardous materials.</li> <li>• State the importance of participating in fire drills and other safety workshops.</li> <li>• Discuss the significance of conforming to basic hygiene practices such as washing hands, using alcohol-based hand sanitizers.</li> <li>• List the different methods of cleaning, disinfection, sanitization, etc.</li> <li>• Discuss the importance of self-quarantine or self-isolation.</li> <li>• Explain the path of disease transmission.</li> <li>• Discuss organizational hygiene and sanitation guidelines and ways of reporting breaches/gaps, if any.</li> <li>• Explain the ways to optimize usage of resources.</li> <li>• Discuss various methods of waste management and disposal.</li> <li>• List the different categories of waste for the purpose of segregation.</li> <li>• Differentiate between recyclable and non-recyclable waste.</li> <li>• State the importance of using appropriate color dustbins for different types of waste.</li> <li>• Discuss the common sources of pollution and ways to minimize it.</li> </ul>	<ul style="list-style-type: none"> <li>• Prepare a time schedule to complete the tasks on the given time.</li> <li>• Demonstrate the use of safety equipment such as goggles, gloves, ear plugs, shoes, etc.</li> <li>• Demonstrate the correct postures while working and handling hazardous materials at the workplace.</li> <li>• Demonstrate how to evacuate the workplace in case of an emergency.</li> <li>• Show how to sanitize and disinfect one's work area regularly.</li> <li>• Demonstrate the correct way of washing hands using soap and water.</li> <li>• Demonstrate the correct way of sanitizing hands using alcohol-based hand rubs.</li> <li>• Display the correct way of wearing and removing PPE such as face masks, hand gloves, face shields, PPE suits, etc.</li> <li>• Demonstrate warning labels, symbols and other related signages.</li> <li>• Perform basic checks to identify any spills and leaks and that need to be plugged /stopped.</li> <li>• Demonstrate different disposal techniques depending upon different types of waste.</li> <li>• Employ different ways to clean and check if equipment/machines are functioning as per requirements and report malfunctioning, if observed.</li> <li>• Demonstrate ways for efficient utilization of material and water.</li> </ul>
<b>Classroom Aids</b>	
White board/ black board marker / chalk, Duster, Computer or Laptop attached to LCD projector	

## Tools, Equipment and Other Requirements

Personal Protection Equipment: Safety glasses, Head protection, Rubber gloves, Safety footwear, Warning signs and tapes, Fire extinguisher and First aid kit

## Module 5: Interact Effectively with Team Members and Customers

### Mapped to TEL/N9102 v1.0

#### Terminal Outcomes:

- Discuss how to communicate effectively and develop interpersonal skills
- Explain the importance of developing sensitivity towards differently abled people

<b>Duration: 10:00</b>	<b>Duration: 20:00</b>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• Discuss the importance of following the standard operating procedures of the company w.r.t priority, confidentiality and security.</li> <li>• Explain the standard procedure of communication and escalations of issues at the workplace.</li> <li>• Discuss the importance of timely rectification of issues.</li> <li>• State the importance of coordinating and resolving conflicts with the team members to achieve smooth workflow.</li> <li>• Discuss about the different types of disabilities with their respective issues.</li> <li>• List health and safety requirements for persons with disability.</li> <li>• Describe the rights, duties and benefits available at workplace for person with disability.</li> <li>• Explain the process of recruiting people with disability for a specific job.</li> <li>• Discuss the specific ways to help people with disability to overcome the challenges.</li> </ul>	<ul style="list-style-type: none"> <li>• Use different modes of communication as per requirement and need.</li> <li>• Prepare a sample report of the commonly occurring errors and their solutions.</li> <li>• Demonstrate the use of gender and PwD (Person with Disability) inclusive language.</li> <li>• Prepare a list of institutes and government schemes that help PwD in overcoming challenges.</li> <li>• Demonstrate the ideal behaviour with a PwD in an organization.</li> </ul>
<b>Classroom Aids</b>	
Whiteboard and Markers, Chart paper and sketch pens, LCD Projector and Laptop for presentations	
<b>Tools, Equipment and Other Requirements</b>	
Sample of escalation matrix, organisation structure	

## Module 6: On-the-Job Training

### Mapped to Telecom Technician - IOT Device/System

<b>Mandatory Duration:</b> 120:00	<b>Recommended Duration:</b> 00:00
<b>Location: On-Site</b>	
<b>Terminal Outcomes</b>	
<ol style="list-style-type: none"> <li>1. Collate installation points for capturing desired input parameters and gateway accounting to meet power supply requirements.</li> <li>2. Connect the communication line using appropriate nodes, gateway, ethernet, and 3G/4G/Wi-fi networks and check the functioning of the protocols.</li> <li>3. Record appropriate technical forms, activity logs.</li> <li>4. Demonstrate how to locate points on surface and mount IoT devices at identified points/location.</li> <li>5. Supervise necessary connections for power supply and earthing.</li> <li>6. Ensure that the cable connectors and microcontroller used for data transfer device (desktop/laptop).</li> <li>7. Install suitable framework on desktop/laptop.</li> <li>8. Compile on-board microprocessor code using appropriate framework.</li> <li>9. Supervise the team to ensure proper functioning of microcontroller and related devices.</li> <li>10. Set up nodes and gateways appropriately for execution of the uploaded software.</li> <li>11. Determine that effective connectivity is maintained between gateway and local Wi-fi router or 3G/4G connectivity options.</li> <li>12. Verify data transfer and confirm the same from the server end.</li> <li>13. Connect devices, cables, connectors, grounding, frameworks and perform their error reading &amp; troubleshooting.</li> <li>14. Set up a test environment and formulate test strategy/test cases.</li> <li>15. Verify all connections and pin/jumper settings are uninterrupted.</li> <li>16. Perform re-loading of node software.</li> <li>17. Create appropriate connectivity IDs/password in the software code.</li> <li>18. Check and test communication link performance matrix between node and gateway.</li> <li>19. Test data transfer from gateway to server.</li> <li>20. Report issues/concern to the central/main tech team.</li> </ol>	

## Module 7: DGT/VSQ/N0102 Employability Skills (60 hours)

### Mapped to Telecom Technician - IOT Device/System

**Mandatory Duration:** 60:00

**Location:** On-Site

S.No.	Module Name	Key Learning Outcomes	Duration (hours)
1.	Introduction to Employability Skills	<ul style="list-style-type: none"> <li>Discuss the Employability Skills required for jobs in various industries.</li> <li>List different learning and employability related GOI and private portals and their usage.</li> </ul>	1.5
2.	Constitutional values - Citizenship	<ul style="list-style-type: none"> <li>Explain the constitutional values, including civic rights and duties, citizenship, responsibility towards society and personal values and ethics such as honesty, integrity, caring and respecting others that are required to become a responsible citizen.</li> <li>Show how to practice different environmentally sustainable practices.</li> </ul>	1.5
3.	Becoming a Professional in the 21st Century	<ul style="list-style-type: none"> <li>Discuss importance of relevant 21st century skills.</li> <li>Exhibit 21st century skills like Self-Awareness, Behavior Skills, time management, critical and adaptive thinking, problem-solving, creative thinking, social and cultural awareness, emotional awareness, learning to learn etc. in personal or professional life.</li> <li>Describe the benefits of continuous learning.</li> </ul>	2.5
4.	Basic English Skills	<ul style="list-style-type: none"> <li>Show how to use basic English sentences for every day conversation in different contexts, in person and over the telephone.</li> <li>Read and interpret text written in basic English</li> <li>Write a short note/paragraph / letter/e-mail using basic English.</li> </ul>	10
5.	Career Development & Goal Setting	<ul style="list-style-type: none"> <li>Create a career development plan with well-defined short- and long-term goals.</li> </ul>	2
6.	Communication Skills	<ul style="list-style-type: none"> <li>Demonstrate how to communicate effectively using verbal and nonverbal communication etiquette.</li> <li>Explain the importance of active listening for effective communication.</li> <li>Discuss the significance of working collaboratively with others in a team.</li> </ul>	5
7.	Diversity & Inclusion	<ul style="list-style-type: none"> <li>Demonstrate how to behave, communicate, and conduct oneself appropriately with all genders and PwD.</li> <li>Discuss the significance of escalating sexual harassment issues as per POSH act.</li> </ul>	2.5
8.	Financial and Legal Literacy	<ul style="list-style-type: none"> <li>Outline the importance of selecting the right financial institution, product, and service.</li> <li>Demonstrate how to carry out offline and online financial transactions, safely and securely.</li> <li>List the common components of salary and compute income, expenditure, taxes, investments etc.</li> <li>Discuss the legal rights, laws, and aids.</li> </ul>	5
9.	Essential Digital	<ul style="list-style-type: none"> <li>Describe the role of digital technology in today's life.</li> </ul>	10

	Skills	<ul style="list-style-type: none"> <li>• Demonstrate how to operate digital devices and use the associated applications and features, safely and securely.</li> <li>• Discuss the significance of displaying responsible online behavior while browsing, using various social media platforms, e-mails, etc., safely and securely.</li> <li>• Create sample word documents, excel sheets and presentations using basic features.</li> <li>• Utilize virtual collaboration tools to work effectively.</li> </ul>	
10.	Entrepreneurship	<ul style="list-style-type: none"> <li>• Explain the types of entrepreneurship and enterprises.</li> <li>• Discuss how to identify opportunities for potential business, sources of funding and associated financial and legal risks with its mitigation plan.</li> <li>• Describe the 4Ps of Marketing-Product, Price, Place and Promotion and apply them as per requirement.</li> <li>• Create a sample business plan, for the selected business opportunity.</li> </ul>	7
11	Customer Service	<ul style="list-style-type: none"> <li>• Describe the significance of analyzing different types and needs of customers.</li> <li>• Explain the significance of identifying customer needs and responding to them in a professional manner.</li> <li>• Discuss the significance of maintaining hygiene and dressing appropriately.</li> </ul>	5
12	Getting Ready for Apprenticeship & Jobs	<ul style="list-style-type: none"> <li>• Create a professional Curriculum Vitae (CV).</li> <li>• Use various offline and online job search sources such as employment exchanges, recruitment agencies, and job portals respectively.</li> <li>• Discuss the significance of maintaining hygiene and confidence during an interview.</li> <li>• Perform a mock interview.</li> <li>• List the steps for searching and registering for apprenticeship opportunities.</li> </ul>	8

LIST OF TOOLS & EQUIPMENT FOR EMPLOYABILITY SKILLS		
S No.	Name of the Equipment	Quantity
1.	Computer (PC) with latest configurations – and Internet connection with standard operating system and standard word processor and worksheet software (Licensed) (all software should either be latest version or one/two version below)	As required
2.	UPS	As required
3.	Scanner cum Printer	As required
4.	Computer Tables	As required
5.	Computer Chairs	As required
6.	LCD Projector	As required
7.	White Board 1200mm x 900mm	As required
<i>Note: Above Tools &amp; Equipment not required, if Computer LAB is available in the institute.</i>		

# Annexure

## Trainer Requirements (*Telecom Technician - IOT Device/System*)

Trainer Prerequisites						
Minimum Educational Qualification	Specialization	Relevant Industry Experience		Training Experience		Remarks
		Years	Specialization	Years	Specialization	
Diploma	Science/Electronics/ Telecom/IT and other related domains	2	IoT Devices/ Optical Fiber/ Broadband Domain	0	NA	Eligible for ToT program
Graduate	Science/Electronics/ Telecom/IT and other relevant domains	1	IoT Devices/ Optical Fiber/ Broadband Domain	0	NA	Eligible for ToT program

Trainer Certification	
Domain Certification	Platform Certification
Job Role: “Telecom Technician – IoT Devices/System Level 4” “TEL/Q6210 v2.0”, Minimum accepted score is 80%	Job Role: “Trainer”, “MEP/Q2601 v1.0”, Minimum Accepted score is 80%



## Assessor Requirements (*Telecom Technician - IOT Device/System*)

Assessor Prerequisites						
Minimum Educational Qualification	Specialization	Relevant Industry Experience		Training Experience		Remarks
		Years	Specialization	Years	Specialization	
Diploma	Science/Electronics /Telecom/IT and other related domains	2	IoT Devices/ Optical Fiber/ Broadband Domain	0	NA	Eligible for ToA program
Graduate	Science/Electronics /Telecom/IT and other relevant domains	1	IoT Devices/ Optical Fiber/ Broadband Domain	0	NA	Eligible for ToA program

Assessor Certification	
Domain Certification	Platform Certification
Job Role: “Telecom Technician – IoT Devices/System Level 4” “TEL/Q6210 v2.0”, Minimum accepted score is 80%	Job Role: “Assessor”, “MEP/Q2701 v1.0”, Minimum Accepted score is 80%

## Trainer Requirements (Employability Skills 60 hours)

Trainer Prerequisites						
Minimum Educational Qualification	Specialization	Relevant Industry Experience		Training Experience		Remarks
		Years	Specialization	Years	Specialization	
Graduate/CITS	Any discipline			2	Teaching experience	Prospective ES trainer should:
Current ITI trainers	Employability Skills Training (3 days full-time course done between 2019-2022)					<ul style="list-style-type: none"> <li>• have good communication skills</li> <li>• be well versed in English</li> <li>• have digital skills</li> </ul>
Certified current EEE trainers (155 hours)	from Management SSC (MEPSC)					<ul style="list-style-type: none"> <li>• have attention to detail</li> <li>• be adaptable</li> <li>• have willingness to learn</li> </ul>
Certified Trainer	Qualification Pack: Trainer (MEP/Q0102)					

Trainer Certification	
Domain Certification	Platform Certification
Certified in 60-hour Employability NOS (2022), with a minimum score of 80% OR Certified in 120-, 90-hour Employability NOS (2022), with a minimum score of 80%	NA

## Master Trainer Requirements (Employability Skills 60 hours)

Master Trainer Prerequisites						
Minimum Educational Qualification	Specialization	Relevant Industry Experience		Training Experience		Remarks
		Years	Specialization	Years	Specialization	
Graduate/CITS	Any discipline			3	Employability Skills curriculum training experience with an interest to train as well as orient other peer trainers	Prospective ES Master trainer should: <ul style="list-style-type: none"> <li>• have good communication skills</li> <li>• be well versed in English</li> <li>• have basic digital skills</li> </ul>
Certified Master Trainer	Qualification Pack: Master Trainer (MEP/Q2602)			3	EEE training of Management SSC (MEPSC) (155 hours)	<ul style="list-style-type: none"> <li>• have attention to detail</li> <li>• be adaptable</li> <li>• have willingness to learn</li> <li>• be able to grasp concepts fast and is creative with teaching practices and likes sharing back their learning with others</li> </ul>

Master Trainer Certification	
Domain Certification	Platform Certification
Certified in 60-hour Employability NOS (2022), with a minimum score of <b>90%</b> .  <b>OR</b> Certified in 120-, 90-hour Employability NOS (2022), with a minimum score of <b>90%</b>	NA

## Assessment Strategy

1. Assessment System Overview:
  - Batches assigned to the assessment agencies for conducting the assessment on SDSM/SIP or email
  - Assessment agencies send the assessment confirmation to VTP/TC looping SSC
  - Assessment agency deploys the ToA certified Assessor for executing the assessment
  - SSC monitors the assessment process & records
2. Testing Environment:
  - Confirm that the centre is available at the same address as mentioned on SDMS or SIP
  - Check the duration of the training.
  - Check the Assessment Start and End time to be as 10 a.m. and 5 p.m.
  - If the batch size is more than 30, then there should be 2 Assessors.
  - Check that the allotted time to the candidates to complete Theory & Practical Assessment is correct.
  - Check the mode of assessment—Online (TAB/Computer) or Offline (OMR/PP).
  - Confirm the number of TABs on the ground are correct to execute the Assessment smoothly.
  - Check the availability of the Lab Equipment for the particular Job Role.
3. Assessment Quality Assurance levels / Framework:
  - Question papers created by the Subject Matter Experts (SME)
  - Question papers created by the SME verified by the other subject Matter Experts
  - Questions are mapped with NOS and PC
  - Question papers are prepared considering that level 1 to 3 are for the unskilled & semi-skilled individuals, and level 4 and above are for the skilled, supervisor & higher management
  - Assessor must be ToA certified & trainer must be ToT Certified
  - Assessment agency must follow the assessment guidelines to conduct the assessment
4. Types of evidence or evidence-gathering protocol:
  - Time-stamped & geotagged reporting of the assessor from assessment location
  - Center photographs with signboards and scheme specific branding
  - Biometric or manual attendance sheet (stamped by TP) of the trainees during the training period
  - Time-stamped & geotagged assessment (Theory + Viva + Practical) photographs & videos
5. Method of verification or validation:
  - Surprise visit to the assessment location
  - Random audit of the batch
  - Random audit of any candidate
6. Method for assessment documentation, archiving, and access
  - Hard copies of the documents are stored
  - Soft copies of the documents & photographs of the assessment are uploaded / accessed from Cloud Storage
  - Soft copies of the documents & photographs of the assessment are stored in the Hard Drives

### Assessment Strategy (Employability Skills 60 hours)

The trainee will be tested for the acquired skill, knowledge and attitude through formative/summative assessment at the end of the course and as this NOS and MC is adopted across sectors and qualifications, the respective AB can conduct the assessments as per their requirements.

## References

## Glossary

Term	Description
<b>Declarative Knowledge</b>	Declarative knowledge refers to facts, concepts and principles that need to be known and/or understood in order to accomplish a task or to solve a problem.
<b>Key Learning Outcome</b>	Key learning outcome is the statement of what a learner needs to know, understand and be able to do in order to achieve the terminal outcomes. A set of key learning outcomes will make up the training outcomes. Training outcome is specified in terms of knowledge, understanding (theory) and skills (practical application).
<b>OJT (M)</b>	On-the-job training (Mandatory); trainees are mandated to complete specified hours of training on site
<b>OJT (R)</b>	On-the-job training (Recommended); trainees are recommended the specified hours of training on site
<b>Procedural Knowledge</b>	Procedural knowledge addresses how to do something, or how to perform a task. It is the ability to work, or produce a tangible work output by applying cognitive, affective or psychomotor skills.
<b>Training Outcome</b>	Training outcome is a statement of what a learner will know, understand and be able to do <b>upon the completion of the training.</b>
<b>Terminal Outcome</b>	Terminal outcome is a statement of what a learner will know, understand and be able to do <b>upon the completion of a module.</b> A set of terminal outcomes help to achieve the training outcome.

## Acronyms and Abbreviations

Term	Description
QP	Qualification Pack
NSQF	National Skills Qualification Framework
NSQC	National Skills Qualification Committee
NOS	National Occupational Standards
SOP	Standard Operating Procedures
NMS	Network Management System
VPN	Virtual Private Network
LAN	Local Area Network
WLAN	Wireless Local Area Network
VLAN	Virtual Local Area Network
TCP/IP	Transmission Control Protocol/Internet Protocol
UDP	User Datagram Protocol
IP	Internet Protocol
SLA	Service Level Agreement
ES	Employability Skills